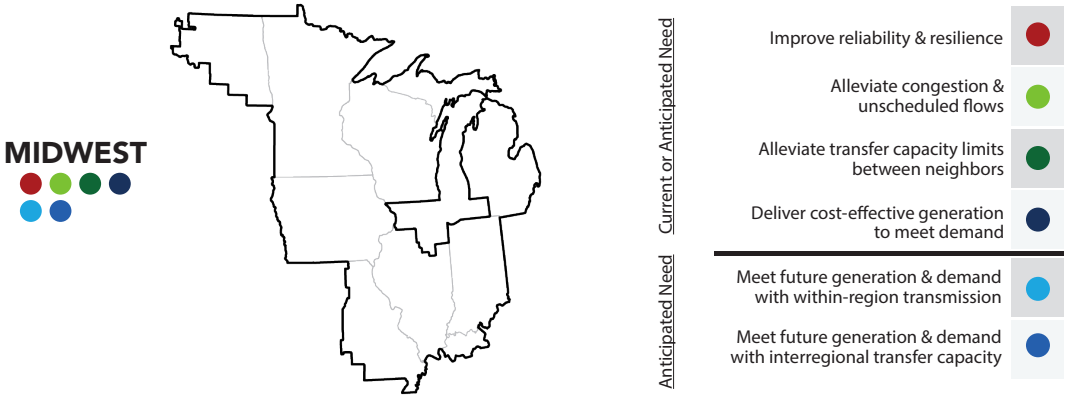
GRID DEPLOYMENT OFFICE

FACT SHEET

2023 NATIONAL TRANSMISSION NEEDS STUDY

MIDWEST REGION

The U.S. Department of Energy's Grid Deployment Office (GDO) released the National Transmission Needs Study ("Needs Study") in October 2023. The Needs Study is the Department's **triennial state of the grid** report. It identifies transmission needs and provides information about current and anticipated future capacity constraints and congestion on the Nation's electric transmission grid. In this fact sheet, we highlight the transmission needs of the Midwest region. The Needs Study provides further detail on the benefits of transmission that could be realized throughout the country.



FINDINGS OF TRANSMISSION NEED IN THE MIDWEST REGION

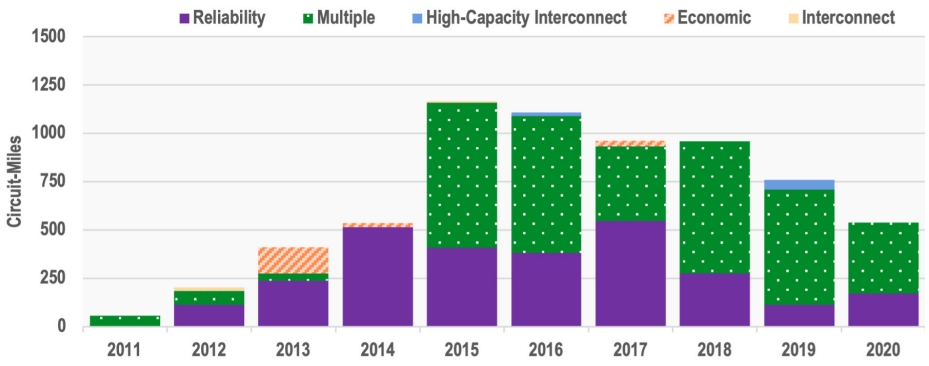
- **Improve reliability and resilience.** Generation retirements over the next few years are anticipated to result in capacity shortfalls without additional generation or import transfer capability additions. Additional regional or interregional transmission to access diverse generation resources would help ensure resource adequacy in the region. Additional interregional transfer capacity would also bolster system resilience and mitigate load shedding during extreme weather events, as was experienced during winter storms in both 2018 and 2021.
- **Alleviate congestion and unscheduled flows.** Congestion costs in the combined Midwest and Delta regions have increased in recent years due to insufficient transmission to support wind generation and due to generation and transmission outages.
- **Alleviate transfer capacity limits between the Midwest region and its neighbors.** High congestion value of interregional transmission from 2012 through 2020 exists between the Midwest region and New York, with an average marginal value of transmission equal to $17/MWh. Similarly high congestion values of transmission exist between the Midwest and Plains regions, ranging from $4/MWh to $15/MWh. A high congestion value indicates that additional transmission between the regions would reduce system congestion and constraints.
- **Deliver cost-effective generation to meet demand.** High-priced areas in northwestern Wisconsin and in eastern and the Upper Peninsula of Michigan persist, and additional transmission to bring cost-effective generation resources to demand would help these areas reduce prices.
- **Meet future generation and demand with additional within-region transmission.** The Midwest region will need an anticipated 10 to 14.9 TW-miles of additional within-region transmission in 2035 (median 13.3 TW-miles, a 112% increase relative to the 2020 system) to meet moderate load and high clean energy growth scenarios.
- **Meet future generation and demand with additional interregional transfer capacity.** The Midwest region will need an anticipated 28 to 51.7 GW of additional transfer capacity with the Mid-Atlantic region in 2035 (median of 33.8 GW, a 156% increase relative to the 2020 system) to meet moderate load growth and high clean energy growth future scenarios. Smaller additional transfers between the Midwest and the Plains (median value of 21.1 GW) and Southeast (median value of 4.5 GW) regions may also be required.

HELPFUL LINKS

- **Read the full study at: www.energy.gov/gdo/national-transmission-needs-study**
- **Contact GDO with additional questions: transmission@hq.doe.gov**

FINDINGS AT A GLANCE

Circuit-miles of new or rebuilt transmission lines (≥ 100 kV) energized between 2011and 2020 by project driver.

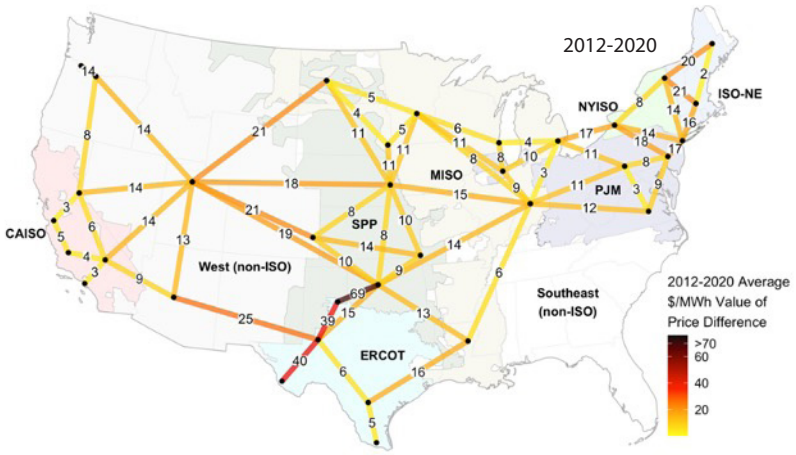


Transmission projects energized over the last decade in the Midwest region **addressed a diverse set of needs**, including **reliability concerns**.

Wholesale market price differentials demonstrate that the **highest value of new interregional transmission** exists **between the Midwest region and New York**.

The average marginal value of transmission between the Midwest region and New York from 2012 through 2020 is equal to $17/MWh.

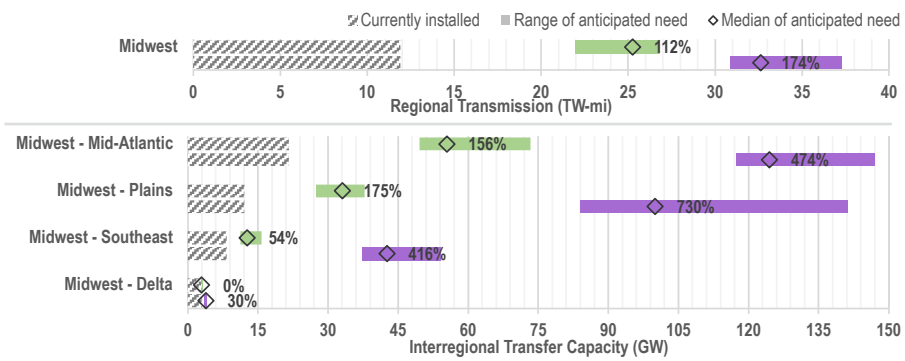
Congestion value of hypothetical transmission links between select zonal nodes within and across regions.



Note: Wholesale market price data is limited for non-Regional Transmission Organization (RTO)/Independent System Operator (ISO) regions. Absence of data does not necessarily indicate that there is no need for transmission to alleviate congestion and/or unscheduled flows in non-RTO/ISO regions. Findings are organized using geographic region nomenclature as described in the Needs Study.
Source: D. Millstein, et al. (2022)

Within-region transmission and interregional transfer capacity need for the Midwest region in 2035

Range of new transmission need for future scenarios with moderate load and high clean energy growth (green, top for each region) and high load and high clean energy growth (purple, bottom). Median % growth compared to 2020 system shown.



Capacity expansion modeling results for the Moderate/High scenario group suggest an anticipated need of **13.3 TW-miles of new within-region transmission by 2035** (112% growth relative to 2020), and **33.8 GW of new interregional transfer capacity with the Mid-Atlantic region by 2035** (156% growth relative to 2020).

Median 2035 capacity expansion modeling results for Moderate/High scenario group.

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